

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
6 May 2005 (06.05.2005)

PCT

(10) International Publication Number
WO 2005/041308 A1

(51) International Patent Classification⁷: H01L 29/78 Mansion 209, 487-35 Mochung-Dong, Heungduk-Gu, Chongju, Chungcheongbuk-Do 361-808 (KR).

(21) International Application Number: PCT/KR2004/000760 (74) Agent: SHIN, Young Moo; Ace Tower, 4th Floor, 1-170 Soonhwa-Dong, Chung-Gu, Seoul 100-130 (KR).

(22) International Filing Date: 1 April 2004 (01.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10-2003-0074115 23 October 2003 (23.10.2003) KR

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(71) Applicant (for all designated States except US): ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE [KR/KR]; 161, Gajeong-Dong, Yuseong-Gu, Daejon 305-350 (KR).

(72) Inventors; and

(75) Inventors/Applicants (for US only): YOUN, Doo Hyeb [KR/KR]; Expo Apt. 104-1203, Jeonmin-Dong, Yuseong-Gu, Daejon 305-761 (KR). KIM, Hyun Tak [KR/KR]; Expo Apt. 206-1505, Jeonmin-Dong, Yuseong-Gu, Daejon 305-761 (KR). CHAE, Byung Gyu [KR/KR]; 236-1 Gajeong-Dong, Yuseong-Gu, Daejon 305-350 (KR). KANG, Kwang Yong [KR/KR]; Hanwool Apt. 110-802, Shinsung-Dong, Yuseong-Gu, Daejon 305-707 (KR). MAENG, Sung Lyul [KR/KR]; Green

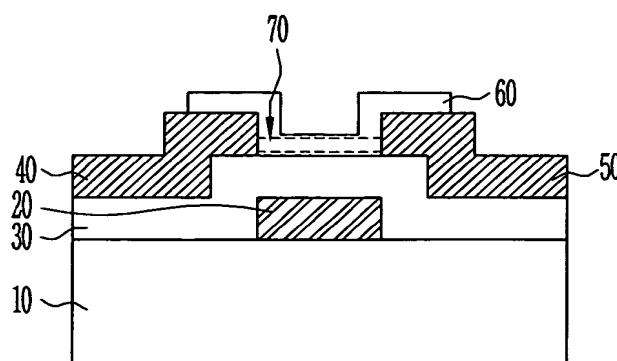
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METAL-INSULATOR TRANSITION SWITCHING TRANSISTOR AND METHOD FOR MANUFACTURING THE SAME



(57) Abstract: Provided is a metal-insulator-transition switching transistor with a gate electrode on a silicon substrate (back-gate structure) and a metal-insulator-transition channel layer of VO₂ that changes from an insulator phase to a metal phase, or vice versa, depending on a variation of an electric field, and a method for manufacturing the same, whereby it is possible to fabricate a metal-insulator-transition switching transistor having high current gain characteristics and being stable thermally.

WO 2005/041308 A1